EMERGENCY AIRWORTHINESS DIRECTIVE

Aircraft Certification Service
Washington, DC

U.S. Department
of Transportation
**Federal Aviation
Administration**

We post Emergency ADs on the internet at "www.faa.gov"

DATE: April 15, 2003
AD #: 2003-08-52

This emergency airworthiness directive (AD) 2003-08-52 is sent to all owners and operators of GE Aircraft Engines (GEAE) CT7-9B turboprop engines. These engines are installed on, but not limited to Saab Aircraft AB 340B airplanes.

Background

This emergency AD is prompted by reports of 12 compressor stall events that occurred over a six month period. This is in contrast to recent historical experience of four to six stall events per year. The stall events have occurred on deceleration when transitioning from takeoff power to climb power. Of the 10 events under investigation, nine had the compressor variable geometry (VG) rigged to the VG schedule N1. The manufacturer's maintenance manuals and related service bulletins permit the compressor VG to be rigged to either the VG schedule N or the VG schedule N1. The VG schedule N provides a higher stall margin at the expense of a small reduction of engine performance margin as compared to the VG schedule N1. Since 1992, the manufacturer has recommended that overhaul shops use the VG schedule N only. VG schedule N provides more stall margin on used engines, which inherently have a lower stall margin due to wear or deterioration. Other factors that contribute to lower stall margins include dirty compressors and the increased compressor clearances that occur during the first takeoff of the day. This condition, if not corrected, could result in a dual-engine in-flight shutdown or power loss due to a compressor stall during deceleration from takeoff power to climb power.

Explanation of Relevant Service Information

We have reviewed GEAE Alert Service Bulletin (ASB) No. CT7-TP S/B 72-A0328, Revision 1, dated April 8, 2003. That ASB describes procedures for rigging the compressor VG to the VG schedule N.

Interim Action

The investigation to determine the root causes of the decel stall events is ongoing. We may take further rulemaking action when the root causes are identified.

FAA's Determination and Requirements of the Rule

An unsafe condition has been identified that is likely to exist or develop on other GEAE CT7-9B turboprop engines of this same type design. This AD requires:

- If both engines on the airplane are rigged to VG schedule N1, rigging the compressor VG on one engine to VG schedule N within 30 flight hours (FH) or 3 days after receipt of this emergency AD, whichever occurs later and,

- Rigging the remaining engine compressor VG to VG schedule N within 100 FH or 10 days after the effective date of this AD, whichever occurs earlier.
- If only one engine is rigged to VG schedule N1, rigging the compressor VG to VG schedule N within 100 FH or 10 days after receipt of this emergency AD, whichever occurs earlier.

The actions must be done per GEAE ASB No. CT7-TP S/B 72-A0328, Revision 1, dated April 8, 2003, described previously.

Determination of Rule's Effective Date

This AD is issued under 49 U.S.C. Section 44701 according to the authority delegated to me by the Administrator, and is effective immediately upon receipt.

Federal Aviation Administration (FAA)
Emergency Airworthiness Directive (AD) 2003-08-52
Docket No. 2003-NE-16-AD
GE Aircraft Engines (GEAE) CT7-9B Turboprop Engines
Subject: Rigging of Compressor Variable Geometry (VG) to VG Schedule N

Effective Date

(a) **Emergency AD 2003-08-52, issued on April 15, 2003, is effective upon receipt**.

Affected ADs

(b) [None.]

Applicability

(c) This emergency AD applies to GEAE CT7-9B turboprop engines. These engines are installed on, but not limited to Saab Aircraft AB 340B airplanes.

Unsafe Condition

(d) This AD was prompted by reports of 12 compressor stall events that occurred over a six month period. The actions specified in this AD are intended to prevent a dual-engine in-flight shutdown or power loss due to a compressor stall during deceleration from takeoff power to climb power.

Compliance

(e) Compliance with the requirements of this emergency AD is required as indicated unless already done.

Determining VG Compressor Rigging Schedule

(f) Determine which schedule was used to rig the compressor VG. The serial numbers (SNs) contained in Table 1 of this emergency AD are known to have been rigged to VG schedule N1. Engines with SNs that are not listed in Table 1 might be rigged to VG schedule N1. You must review the engine records to determine if the engines are rigged to VG schedule N1 using GEAE Service Bulletin (SB) No. CT7-TP S/B 72-0241, dated April 6, 1990. Table 1 follows:

Table 1 – SNs of Engines Known to Have Been Rigged to VG Schedule N1

785102	785104	785106	785107	785109	785111
785112	785113	785117	785118	785125	785128
785129	785131	785133	785136	785138	785148
785150	785151	785152	785154	785160	785185
785188	785211	785231	785232	785234	785235
785237	785239	785241	785257	785259	785265
785266	785275	785322	785325	785326	785334
785375	785391	785400	785459	785460	785462
785465	785474	785476	785477	785480	785481
785487	785499	785506	785534	785538	785554
785569	785591	785592	785598	785603	785700
785759					

Rigging the VG Compressor to Schedule N

(g) If the compressor VGs of both engines on the airplane are rigged to VG schedule N using GEAE SB CT7-TP S/B 72-0328 dated June 9, 1992 or GEAE Alert Service Bulletin (ASB) CT7-TP S/B 72-A0328, Revision 1, dated April 8, 2003 no further action is required.

(h) If the compressor VGs on both engines on the airplane are rigged to VG schedule N1, do the following:

(1) Within 30 flight hours (FH) or 3 days after receipt of this emergency AD, whichever occurs later, rig the compressor VG on one engine to VG schedule N in accordance with 3.A.(1) through 3.A.(12) of the Accomplishment Instructions of GEAE ASB No. CT7-TP S/B 72-A0328, Revision 1, dated April 8, 2003.

(2) Within 100 FH or 10 days after receipt of this emergency AD, whichever occurs earlier, rig the compressor VG on the remaining engine to VG schedule N in accordance with 3.A.(1) through 3.A.(12) of the Accomplishment Instructions of GEAE ASB No. CT7-TP S/B 72-A0328, Revision 1, dated April 8, 2003.

(i) If the compressor VG on one engine on the airplane is rigged to VG schedule N1, within 100 FH or 10 days after receipt of this emergency AD, whichever occurs earlier, rig the compressor VG to VG schedule N in accordance with 3.A.(1) through 3.A.(12) of the Accomplishment Instructions of GEAE ASB No. CT7-TP S/B 72-A0328, Revision 1, dated April 8, 2003.

Installation of Engines with VG Schedule N1

(j) After receipt of this emergency AD, do not install any CT7-9B turboprop engine that is rigged to VG schedule N1 on to any Saab Aircraft AB 340B airplane.

Alternative Methods of Compliance

(k) Alternative methods of compliance must be requested in accordance with 14 CFR part 39.19, and must be approved by the Manager, Engine Certification Office, FAA.

Related Information

(l) Additional information to help minimize the occurrence of multiple-engine in-flight shutdowns or power loss may be found in GEAE All Operator's Wire CT7-03-02, dated April 3, 2003.

Contact Information

(m) For further information, contact: Anthony Cerra, Aerospace Engineer, Engine Certification Office, FAA, Engine and Propeller Directorate, 12 New England Executive Park, Burlington, MA 01803-5299, telephone (781) 238-7176; fax (781) 238-7199.

Issued in Burlington, MA on April 15, 2003.

Francis A. Favara,
Acting Manager, Engine and Propeller Directorate
Aircraft Certification Service